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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,875	10/02/2003	Katsumasa Yoshii	9281-4654	9827

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/677,875

Applicant(s)

YOSHII, KATSUMASA

Examiner

Jeanne A. Di Grazio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims

Claims 1-20 are pending per Amendment of August 3, 2005. Claims 1 and 4-7 have been amended per said Amendment with claims 10-20 being newly added per said Amendment.

Priority

Priority to Japanese Patent Application No. 2002-298596 (Oct. 11, 2002) is claimed.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Preliminary Amendment

Applicant's Preliminary Amendment of October 2, 2003 is acknowledged.

Claim Objections

Claims 18-20 are objected to because of the following informalities:

Regarding claims 18-20 (new), the limitation "additive rate" is objected to as unclear.

'Additive rate' is unclear to the Examiner for at least three reasons.

(1) Applicant has not provided a definition in the Specification as to what Applicant means by "additive rate."

(2) A search of class 349 in and of itself in addition to a search of relevant 349 subclasses 112 (diffusers) and 113 (reflectors) yielded no art containing “additive rate.” Thus, the Examiner presumes that this is not jargon in the relevant art.

(3) Rate implies something as a function of time and not merely a percentage.

Because the term “additive rate” is not clearly defined, then, for examination purposes, the Examiner presumes that art of record meeting Applicant’s structure then necessarily includes “additive rate.”

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 10, 12-13, 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 6,141,073 (to Sasaki et al.) and further in view of United States Patent 6,747,719 B2 (to Higashi).

As to claim 1 (amended), in one embodiment, Itoh features (Figures 15(a)-15(d)) the general structure of a reflection substrate (31) on which is formed an aluminum reflecting layer (41) and an epoxy resin smooth layer (53) deposited on the reflection substrate (31) and

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aluminum reflecting layer (41)(Applicant's "an optical diffusion layer deposited on the reflection substrate") wherein the reflection substrate (See 31 and 41) is provided with a plurality of reflection inclined planes continuously formed on a surface thereof with a stripe geometry in plan view (the substrate and reflecting layer are saw-toothed – see Figures 15(a)-15(d)) and a surface of each reflection inclined plane is an irregular surface. Please also note that Itoh teaches that the pitch of peaks and recesses is 20 μm (See Column 23, Lines 15-25)(Applicant's "adjacent concave ... at a pitch between 1 μm and 30 μm ").

Itoh does not appear to explicitly specify that the surface is provided with concave portions having a depth within a range of 0.3 μm to 3 μm irregularly, adjacent concave portions arranged irregularly.

Sasaki teaches and discloses a reflective type liquid crystal display in which the depth of concave portions is 0.5 μm to 5 μm .

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Sasaki for appropriate flatness of an overcoat layer, constant thickness of the liquid crystal layer and to improve display quality (Columns 9 and 10, Lines 35-55 and 45-65 respectively).

Itoh does not appear to explicitly specify that the optical diffusion layer is made of a matrix of a transparent resin or a transparent adhesive, the optical diffusion layer having fine particles dispersed therein so as to flatten the reflection substrate.

Higashi teaches and discloses a light reflecting layer having a thin metal film directly or via a primer coating on individual particles of single-layer coating (Title, entire patent).

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Synthetic resin particles of a diameter range of 1 to 20 μm are dispersed in a binder (Column 6, Lines 15-55).

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Higashi for efficient use of the light reflecting plate (Column 1, Lines 1-15).

As to claims 2, and 10 (new), because the optical diffusion layer of Higashi has the structure as claimed by Applicant, then, it has Applicant's recited ranges for haze.

As to claim 3, an inclined angle of the reflection inclined plane with respect to a surface of the reflection substrate is 20^0 (Column 23, Lines 19-20).

As to claims 12 and 13 (both new), Higashi's particle diameter range as noted is between 1 to 20 μm .

As to claim 16 (new), Higashi teaches the various materials that may be used for the particles (Column 6, Lines 15-55).

As to claims 18-19 (both new), the particles are dispersed in a binder and presumably at Applicant's "additive rate."

Claims 4-9, 11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 6,141,073 (to Sasaki et al.), and further in view of United States Patent 6,747,719 B2 (to Higashi), and further in view of United States Patent 3,905,682 (to Meyerhofer).

As to claim 4 (amended), Itoh teaches and discloses with reference to Figure 1, a liquid crystal cell comprising substrates opposing each other (substrates 12 and 22) and a liquid crystal sandwiched (10) between the substrates (12 and 22), one substrate having an electrode (upper

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substrate 12, upper electrode 14) an alignment layer formed on the internal surface in that order from the one substrate (upper orientation layer 11) while the other substrate (lower substrate 22) has an electrode (lower electrode 24) and an alignment layer (lower orientation layer 21) formed on an internal surface in that order from the other substrate.

Itoh teaches both internal and external reflection substrates (31) (See Figures 1 and 2 for example).

Itoh features (Figures 15(a)-15(d)) a reflection substrate (31) on which is formed an aluminum reflecting layer (41) and an epoxy resin smooth layer (53) deposited on the reflection substrate (31) and aluminum reflecting layer (41)(Applicant's "an optical diffusion layer deposited on the reflection substrate") wherein the reflection substrate (See 31 and 41) is provided with a plurality of reflection inclined planes continuously formed on a surface thereof with a stripe geometry in plan view (the substrate and reflecting layer are saw-toothed – see Figures 15(a)-15(d)) and a surface of each reflection inclined plane is an irregular surface. Please also note that Itoh teaches that the pitch of peaks and recesses is 20 μm (See Column 23, Lines 15-25)(Applicant's "adjacent concave ... at a pitch between 1 μm and 30 μm ").

Itoh notes that light regularly reflects towards the user from a light source positioned in front of the device (Column 2, Lines 64-67).

Itoh does not appear to explicitly specify that the surface is provided with concave portions having a depth within a range of 0.3 μm to 3 μm irregularly, adjacent concave portions arranged irregularly .

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Sasaki teaches and discloses a reflective type liquid crystal display in which the depth of concave portions is 0.5 μm to 5 μm .

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Sasaki for appropriate flatness of an overcoat layer, constant thickness of the liquid crystal layer and to improve display quality (Columns 9 and 10, Lines 35-55 and 45-65 respectively).

Itoh does not appear to explicitly specify that the optical diffusion layer is made of a matrix of a transparent resin or a transparent adhesive, the optical diffusion layer having fine particles dispersed therein so as to flatten the reflection substrate.

Higashi teaches and discloses a light reflecting layer having a thin metal film directly or via a primer coating on individual particles of single-layer coating (Title, entire patent).

Synthetic resin particles of a diameter range of 1 to 20 μm are dispersed in a binder (Column 6, Lines 15-55).

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Higashi for efficient use of the light reflecting plate (Column 1, Lines 1-15).

Itoh does not appear to explicitly specify a front light arranged adjacently to an external surface of the other substrate.

The Meyerhofer reference is directed to a liquid crystal device of improved contrast (Title, entire patent). Meyerhofer teaches that it is known that because liquid crystal material itself does not emit light, it must therefore be illuminated by a light source. In reflective displays,

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the device is illuminated from its front side so that light incident on a reflector can be used to increase display brightness (Column 1, Lines 6-16).

Therefore it would have been obvious to one of ordinary skill in the art of liquid crystal display devices at the time the invention was made to modify Itoh in view of Meyerhofer to include a front light so that brightness can be enhanced.

As to claims 5-7 (amended), Itoh features internal and external locations for the reflection substrate as in Figures 1 and 2 for example.

As to claims 8 and 9, an inclined angle of the reflection inclined plane with respect to a surface of the reflection substrate is 20° (Itoh Column 23, Lines 19-20).

As to claim 11 (new), because the optical diffusion layer of Higashi has the structure as claimed by Applicant, then, it has Applicant's recited ranges for haze.

As to claims 14-15 (new), Higashi's particle diameter range as noted is between 1 to 20 μm .

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 6,747,719 B2 (to Higashi).

As to claim 20 (new), in one embodiment, Itoh features (Figures 15(a)-15(d)) the general structure of a reflection substrate (31) on which is formed an aluminum reflecting layer (41) and an epoxy resin smooth layer (53) deposited on the reflection substrate (31) and aluminum reflecting layer (41)(Applicant's "an optical diffusion layer deposited on the reflection substrate") wherein the reflection substrate (See 31 and 41) is provided with a plurality of

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reflection inclined planes continuously formed on a surface thereof with a stripe geometry in plan view (the substrate and reflecting layer are saw-toothed – see Figures 15(a)-15(d)) and a surface of each reflection inclined plane is an irregular surface. Please also note that Itoh teaches that the pitch of peaks and recesses is 20 μm (See Column 23, Lines 15-25)(Applicant's "adjacent concave ... at a pitch between 1 μm and 30 μm ").

Itoh does not appear to explicitly specify that the optical diffusion layer is made of a matrix of a transparent resin or a transparent adhesive, the optical diffusion layer having fine particles with a particle diameter between 1 μm and 20 μm dispersed therein and an additive rate of the fine particles to a matrix in which the fine particles are contained is between 0.1 mass% and 10 mass%.

Higashi teaches and discloses a light reflecting layer having a thin metal film directly or via a primer coating on individual particles of single-layer coating (Title, entire patent).

Synthetic resin particles of a diameter range of 1 to 20 μm are dispersed in a binder (Column 6, Lines 15-55).

Because Higashi's structure is like that of Applicant's, then it meets Applicant's "additive rate."

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Higashi for efficient use of the light reflecting plate (Column 1, Lines 1-15).

Response to Arguments

Applicant's arguments with respect to said claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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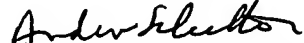
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG


ANDREW SCHECHTER
PRIMARY EXAMINER